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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,770	08/31/2001	Rachel E. Learned	D-4557	2465

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65 Atlantic Avenue
Boston, MA 02110

EXAMINER	
FILE, ERIN M	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 01/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/943,770	LEARNED, RACHEL E.	
	Examiner	Art Unit	
	Erin M. File	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-7,9 and 10* is/are rejected.

7)☒ Claim(s) *4 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/23/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 9 and 10 are rejected under 35 U.S.C. 102(b) as being unpatentable over Segal.

Claim 1, Segal discloses a method for providing parameter estimation for multi-user detection systems in which the received signals are provided with training sequences, comprising the steps:

- A signal is isolated (fig 10a, 1009) and its parameters estimated (1010) (col 6 lines 9,10).
- Signal parameter estimations are performed in 1006, 1010, or 1012 which can include incorporation of training signals (fig 10a, col 6, lines 53-54) used to recreate the input signal. This recreated signal is subtracted from the input signal at the signal subtractor sub-unit 1007 (fig 10a, col 6, lines 2-4).

- The subtracted signal is fed to a cluster processor (1304) to re-detect the information bits of the desired signal, and re-estimate its parameters. (col 7, lines 31-36)

Claim 2, Segal discloses a signal separator (fig 13, 1301) that receives parameter estimates from a plurality of cluster processors and inputs separated signals to these processors. Cluster Processors (1304) detect data bits and track parameters of a cluster of signals. (col 8, lines 1- 4). These parameters determined, as shown in Figure 12, are sufficient to define the transfer functions of the signals.

Claim 3, inherits the limitations of claim 2. Segal discloses a possible sequence of operations that may be used to extract the signal parameters (fig 12). The signal from the receiver generates a timing reference (1201), one correlating the received signal against a training sequence that is stored in the receiver (col 6, 32-37). After the timing estimation is completed other parameters, such as frequency (1202) and amplitude (1203) are estimated and are sent to a signal separation unit (1301). Each signal is processed and tracked (fig 16, 1603) with respect to time and frequency.

Claim 9, inherits the limitations of claim 2. Segal discloses after an initial estimation a multi-user detection system is used that simultaneously tracks all signals in the channel (fig 13).

Claim 10, inherits the limitations of claim 9, further Segal discloses simultaneous tracking includes parallel processors (fig 13, 1304) which training symbols in the separated signals are used to find signal parameters.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segal in view of Hoffman et al.

Claim 5, inherits the limitations of Claim 2. Segal further discloses first estimated channel parameters (fig 12, col 5, line 61 – col 6, line 21). Segal does not disclose means to provide an acquisition channel, however Hoffmann teaches a wireless communication system with an access channel. In this structure Hoffman teaches an access channel for efficient acquisition of an access signal at a base station in a receiver used for parameter estimation (abstract). The use of an acquisition or pilot channel in receivers is common as it allows faster and more accurate synchronization of the receiver. Because of the value of using an

acquisition channel in a receiver it would be obvious to one skilled in the art at the time of invention to incorporate Hoffman's acquisition channel method into Segal's apparatus.

Claim 6, inherits the limitations of Claim 2. Segal discloses a tracking unit where a new signal is detected and its parameter's estimated and tracked (col 5, line 61 – col 6, line 21). Segal does not disclose an acquisition channel. However, Hoffmann teaches a wireless communication system with an access channel. In this structure Hoffman teaches an access channel for efficient acquisition of an access signal at a base station in a receiver which is used for parameter estimation (abstract). The use of an acquisition or pilot channel in receivers is common as it allows faster and more accurate synchronization of the receiver. Because of the value of using an acquisition channel in a receiver it would be obvious to one skilled in the art at the time of invention to incorporate Hoffman's acquisition channel method into Segal's apparatus.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7, is rejected as disclosing a negative limitation of Claim 6.

Claim Objections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 2, 4 are objected to as they lack sufficient antecedent basis.

Claim 1, recites the limitation "the received signals". There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim 2, recites the limitation, "for determining *the* channel transfer functions .... to *said* channel transfer function ". There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim 4, recites the limitation "the estimated channel function for each interfering signal". There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Objections

Claims 4, 8 are objected to as dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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